

THE MULTILATERAL INITIATIVE ON MALARIA: PAST, PRESENT, AND FUTURE

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BACKGROUND AND ACHIEVEMENTS OF THE MULTILATERAL INITIATIVE ON MALARIA

The Multilateral Initiative on Malaria (MIM) is an international alliance of organizations and individuals concerned with malaria research. It aims to maximize the impact of scientific research on malaria in Africa through promoting capacity building and facilitating global collaboration and coordination. It has four objectives:

- **To develop sustainable malaria research capacity in Africa** through international and Pan-African scientific partnerships. Further development of human resources and institutional capacity in Africa is essential to enhance the ability of African countries to address their own health problems. The MIM aims to publicize existing training opportunities and develop research capacity further by facilitating effective scientific partnerships across Africa, and between African researchers and colleagues internationally.
- **To promote global communication and cooperation** between organizations and individuals concerned with malaria to maximize the impact of resources and avoid duplication of effort.
- **To ensure research findings are applied to malaria treatment and control** to translate practical problems into manageable research questions by stimulating and facilitating dialogues among scientists, public health professionals, policy makers, and industry.
- **To raise international public awareness of the problem of malaria** to raise the status of malaria on political agendas to mobilize resources and action.

The MIM was launched in 1997 following the first Pan-African Malaria Conference, held in Dakar, Senegal, where prominent malaria scientists, representatives from the World Health Organization (WHO), and funding organizations from all over the world identified important research priorities for future malaria research. The need to strengthen the capacity of researchers in endemic countries was recognized. A multilateral funding mechanism was set up at the TDR (Special Program for Research and Training in Tropical Diseases of the WHO) where MIM partners could directly contribute money for research capability strengthening (RCS) in Africa in the form of peer-reviewed grants. The MIM was broadened to include representatives of industry and development agencies. It has four main components:

- **The MIM Secretariat**, which has a coordinating function and rotates every three to four years. The secretariat was initially based at the Wellcome Trust in London. In 1999, this function was assumed by the Fogarty International Center at the National Institutes of Health (NIH) before it moved to Stockholm, Sweden in January 2003. The secretariat is currently hosted by the Karolinska Institute and Stockholm University.
- **The MIM-TDR**, which is based at TDR/WHO in Geneva, Switzerland. It evaluates grants and administers funding to African scientists.

- **The MIMCom**, the communications arm of MIM that has built and maintained fast and reliable Internet connections at research sites in Africa. It is based at National Library of Medicine at the NIH.
- **The MR4**, the Malaria Research and Reference Reagent Resource Center, which based at the American Type Culture Collection (ATCC) in Manassas, Virginia and provides free reagents to the malaria research community.

The MIM Partners are governments, development agencies, and various other funding agencies that have supported the MIM. The uniqueness of the MIM is reflected in the organizational structure: multiple support mechanisms convening to strengthen researchers in malaria endemic countries. The overall structure and specificity of the MIM is shown in Figure 1.

During its six years of existence, MIM has made considerable progress. Since 1997, 40 projects have been supported through MIM/TDR. These have promoted national and international collaborations and a multidisciplinary approach to malaria research. The programs have enhanced research leadership and management by African scientists resident in Africa and offered structured research training for young African scientists. Furthermore, MIM/TDR projects have focused on research priorities with potential impact on malaria control in Africa and have resulted in new multi-center projects and research networks. The MIMCom has established fast and reliable Internet connectivity at research sites all across Africa and also seeks to provide access to current medical literature online. The MR4 serves the malaria research community by providing reagents and training. The resource center located at the ATCC has a collection of well-characterized research materials that is responsive to specific requests or research projects. The costs of shipping and handling are covered by the MR4 for investigators in malaria-endemic countries. The MIM Secretariat coordinates the MIM effort and tries to ensure that the MIM components are adequately funded. The Secretariat addresses the problem of isolation of scientists in malaria-endemic countries through the dissemination of relevant information, and supports these researchers to communicating their work to each other and with scientific partners in the north countries. The MIM Secretariat maintains the MIM website, currently at: <http://www.mim.su.se>, and distributes information through the MIM Quarterly Newsletter and the MIM News & Opportunities mailing list. It is also the task of the Secretariat to organize and conduct the MIM Pan-African Malaria Conferences, which are currently the largest meetings world wide solely focusing on malaria research.

SPREADING THE WINGS OF MIM (DON'T COLLIDE WITH OTHER BIRDS)

As was pointed out in the favorable external review¹ that MIM underwent in September–October 2002, the effort has

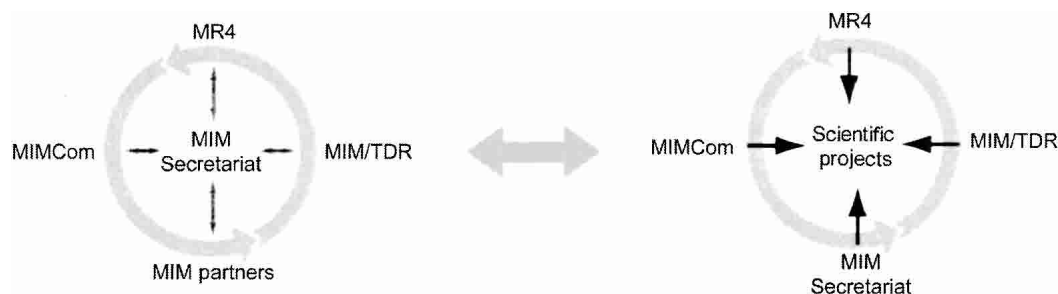


FIGURE 1. Specificity and organizational chart of the Multilateral Initiative on Malaria (MIM). MR4 = Malaria Research and Reference Reagent Resource Center; TDR = Special Program for Research and Training in Tropical Diseases; MIMCom = communications arm of the MIM.

now left infancy and is entering what could be compared with a period of adolescence. During the coming years, new demands will have to be met to ensure future success of this important initiative. The MIM is currently revisiting the research priorities that were identified at the inception in 1997 and is in the process of formulating the strategy for bringing the MIM into maturity. This requires a thorough needs assessment of the growing malaria research community in Africa, a dynamic scientific community undergoing continuous change, and thus with changing needs, but also putting the effort of the MIM into the wider context of combating malaria. One of the objectives of the MIM is "To promote global communication and cooperation between organizations and individuals concerned with malaria to maximize the impact of resources and avoid duplication of effort." Thus, it is imperative to formulate a clear vision of where the niche of the MIM is vis-à-vis other organizations and alliances working to combat malaria to make the struggle against malaria as well concerted as possible.

The last statement also has bearing on the relationship to malaria control. Another of the objectives of MIM is "To ensure research findings are applied to malaria treatment and control to translate practical problems into manageable research questions, by stimulating and facilitating dialogues among scientists, public health professionals, policy makers and industry." This is an area where MIM has not been able to fully achieve its goals. The reasons for this are many. First, it is a problem of tremendous complexity that cannot be resolved by the MIM alone. Second, the shortcoming is in part due to lack of knowledge; although great strides forward have been taken in basic research, there are still several steps along the way that have to be taken before the final destination of implementation of effective control measures can be reached (Figure 2). However, some progress have been made that could partly be attributable to MIM activities. For example, the Durban Conference in 1999, which brought research and control people together, can serve as an example where MIM has acted as a catalyst. Another example of where MIM has been a driving force in highlighting research questions in the context of Africa and relation to control is the meeting on antimalarial drug usage and resistance held in Geneva in 1998.

The completion of the genome sequences of both parasite and vector undoubtedly marked a milestone in malaria research and there are good reasons for optimism, but we still have to remember that many obstacles need to be traversed before we have an effective vaccine or a new drug in our hands. Bridging this gap will be a challenge for all working to

fight malaria. Although the primary objective of the MIM is research, the alliance has to relate to control organizations in a way that stimulates interaction and facilitates translation of research into policy. The success of this translation depends on closer interactions in the above-mentioned interface between research and control. The recent formation of the MIM/TDR/RBM/AFRO grants is one step in this direction. The grants have become available through collaboration between the MIM/TDR, Roll Back Malaria (RBM), and the WHO Regional Office for Africa (AFRO). The overall goal is to promote research and training in strategic areas with imminent relevance to the improvement of malaria control activities. The program was launched under the MIM/TDR umbrella and refereed by the MIM/TDR Task Force, but it focuses on issues related to improving diagnosis and access to treatment, development and expansion of preventive interventions, and evaluating the impact of combined control strategies. The issues discussed above are inextricably connected with the development of an over-all strategic view for the MIM, which involves all arms of the alliance, in which MIM consolidates itself within its niche, and at the same time works closer with other organizations (Figure 3).

FUTURE CHALLENGES FOR MIM CONSTITUENTS

The rotating function of the MIM Secretariat aims to secure the multilateral aspect of the initiative and renders a basis for new input and managerial ideas. Each new Secre-



FIGURE 2. Sequential relationship between research and control.

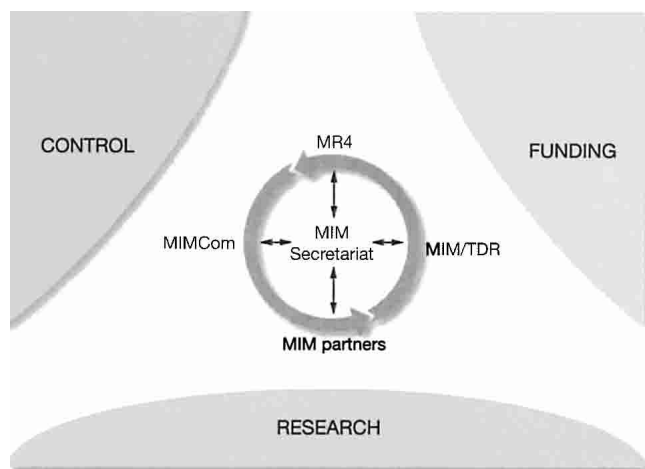


FIGURE 3. Multilateral Initiative on Malaria (MIM) organizational structure and external environment. For definitions of abbreviations, see Figure 1.

tariat can draw upon the experiences made by the previous ones and develop new ways of working depending on local conditions and political context. Future Secretariats will assume some of the functions established by its predecessors and develop new ones, but the main function of coordination should be very clear and should not cross the line to governing. A major challenge is posed by the special organizational structure of the MIM with four independent, self-governing institutions together forming the alliance. The MIM is not *one* organization but an alliance and to maximize the benefits of being an alliance, each constituent needs to have a clear understanding of the added value that comes from being in this structure, and what is required to capture this value. Successful alliances will clearly define the most important benefits of collaboration, formulate shared objectives, and identify what each partner can bring to the table to achieve this. Thus, the strategy and the underlying objectives must involve all constituents. Ultimately, the goal is to transfer the Secretariat to Africa and have it permanently rotating between African countries.

The MIM/TDR could be regarded as the core of the MIM since it is here the general aim of the initiative is being executed. The MIM/TDR has developed a successful model of RCS in which the principal investigator has two collaborating partners, a strong one in north countries and a weaker one in the southern countries. There has been some concern that the weaker partner has not been involved in the projects to a satisfying extent and this needs to be looked at in the future. The MIM/TDR grants are awarded on a highly competitive basis, and only strong applications are funded. However, it is often assumed that a strong scientist is by definition backed up by a strong institution with premier in-house resources in management, statistics, and administration. This is not always the case, and it is becoming evident that there is often a compelling need for an external resource providing assistance on these matters and/or offering mentorship to individual grantees. The characterization of MIM/TDR as the core of the MIM does not lessen the importance of other functions of the alliance. In the future, MIM will have to explore its potential to act as a catalyst and involve new partners, including bilateral organizations, to a larger extent.

The provision of fast and reliable Internet connections by MIMCom is regarded by many as one of the most successful contributions of the MIM, and one might only try to imagine what it would be like to try to be a part of the international scientific community without access to the Internet to understand this statement. The MIMCom network now reaches 17 sites in seven countries throughout the African continent, and six new sites are being planned in three additional countries. The fast and reliable access to the Internet provided by the network has had enormous impact on the performance of the research sites. A significant increase in the number of submitted *and* published research manuscripts, increased number of accepted grant applications, increased collaborative projects, incremental financial support, and more frequent participation in international conferences could be noted at several sites when comparisons were made before and after the Internet connection was provided. Ultimately, it is a question of enabling the scientist to independently, without go-betweens, obtain and share information, form partnerships, and look for funds. To continue to connect the MIM/TDR scientists and to develop areas of information technology management, oversight of bandwidth and usage will be important future projects that have direct links to the strengthening of bioinformatics/functional genomics research capacity in Africa.

Hitherto, the MR4 has not been used by African scientists at the anticipated level. This is partly due to the misconception that the MR4 is exclusively providing reagents relating to molecular biology, and since to date very few African laboratories have the capacity to carry out this work, interest has been low. In the future, there are discussions of locating a small-scale MR4 satellite in Africa for initial provision of basic reagents but also with a focus on training and the development of good laboratory practice and related standard operational procedures. Such a setup would offer great opportunities of expansion of the training and workshops in bioinformatics that have been organized by the MR4, with the possibility of development into a program.

A STARTING POINT FOR NEW DIRECTIONS: THE MIM SURVEY AND THE MIM STRATEGIC ADVISORY BOARD

In December 2002, the incoming MIM Secretariat distributed a questionnaire concerning the achievements and future priorities of the MIM. The questionnaire was sent on the MIM list serve and directly to 50 senior African scientists, including the MIM/TDR grantees. The results have now been compiled and analyzed² in the light of the MIM external review in the autumn of 2002. The respondents almost unanimously called for more emphasis in socioeconomic, control, and behavioral science, and the areas of bioinformatics, functional genomics, and proteomics were suggested to be further strengthened. Thus, at the same time there are recommendations to bridge the gap between basic science and control, and to allocate further resources to develop cutting-edge, high-technology biomedical research. Clinical research is also an area where respondents wish to see further emphasis. Some raised the concern that MIM needs to narrow its priority areas to ensure continued success in the areas that have received support and that adding new areas to the agenda

would dilute the effort. Issues on which there was high level of agreement include increasing the duration of MIM/TDR grants, more efforts in reaching the francophone scientists in west and central Africa, further expansion of MIMCom and MR4 activities in Africa, and more support for the development of research leadership and management. Good and dynamic leadership is seen by many interviewees as a paramount prerequisite for conducting good science. The respondents indicated that there is a need to increase and restructure the career opportunities in science. It was pointed out that scientists in northern countries do not become directors of centers one year after post-doctoral training, whereas this is often seen in African countries. This is suggested to be best tackled by investing in a large base of long-term career support at well-equipped dynamic centers. Networking and mentorship are other suggestions on how to address these questions. A full version of the report can be downloaded at the MIM website (www.mim.su.se) or obtained from the MIM Secretariat.

At the end of April 2003, the MIM Strategic Advisory Board (SAB) convened for the first time in Stockholm. In the external review of 2002, it was strongly recommended that an SAB be appointed to give overall advice to the MIM in general. The MIM Secretariat in Stockholm has invited eight acknowledged scientists with strong African representation to assume this function. The SAB will provide directions and advice that will strategically draft activities for the MIM Secretariat and the MIM as a whole for the coming years. Based on this first meeting with the SAB, it was recommended that the MIM maintain its focus on RCS and add specificity by further enhancing the support provided by MIMCom and MR4 in a coordinated way. The uniqueness of the MIM lies in the support for malaria-related research projects with multi-component support mechanisms surrounding each project (Figure 1). The outcomes of the MIM effort should be identified and monitored and this requires a longer perspective than the three-year grant period. Moreover, socioeconomic and behavioral sciences, which were raised as important issues in the MIM survey, should be further encouraged within the existing framework of research support mechanisms. It is not recommended that the MIM at this point change focus to encompass these areas at the expense of others. Instead, the need for better links with control should be addressed through stimulation of applications within the field and closer relationships and collaborations with control organizations. The same applies for advocacy. To achieve incremental financial support, the MIM should aim for larger projects that involves several MIM components and with defined expected outcomes that can be presented to donors. The benefits of this could be many and it will also strengthen the communication between the MIM components. Furthermore, the balance between expansion, i.e., launching new teams and building new sites, needs to be balanced against consolidation and stabilizing established teams/locations. Both are judged to be important to create a critical mass of well-trained African scientists who form a sustainable research community. The MIM SAB Meeting Report is available on the MIM website (www.mim.su.se) or can be obtained from the MIM Secretariat.

THE ROAD AHEAD

The number of scientists in proportion to population in developing countries equals 3–10% of the same figures for the

developed world and 95% of the new science is generated in countries constituting only 20% of the world's population.³ This not only represents an obvious inequality, and implies that health problems specifically related to developing countries are neglected, but conspicuously highlights that the world is excluding a large fraction of the world's intellectual capacity, whose contributions are potentially beneficial for all. Moreover, the effects of building research capacity are wider than just addressing a scientific problem and educating people, it has, on a large scale, bearing on the general development of a democratic society. The MIM has proven to be a well-working model with a concept for tackling these problems.

Research and development in health is becoming increasingly recognized as a major determinant of successfully combating global health problems in the developing world,⁴ and this will hopefully open new doors in terms of forming partnerships with the private sector and attracting incremental financial support. As anywhere else, a critical issue for the continued success of the MIM is financial. The total expenditure of the MIM for the year 2002 was US \$8 million. The MIM will aim to double this sum during the next phase and to achieve this it is important for the scientific strategy to be harmonized with the financial strategy. The MIM is considered to have been an important driving force in directing resources to malaria research, developing research capacity in Africa, and bringing broader public attention to the malaria agenda. The MIM Pan-African Conferences have served as fora for African scientists to share information and form networks and research collaborations. The numerous workshops and courses arranged by all MIM constituents covering a large number of topics have been enthusiastically attended and have added enormously to the research and control environment. During the next phase, some of the workshops could possibly grow into programs, reaching a larger number of scientists and increasing the impact. The MIM Secretariat has invited a strategic advisory board to actively help in outlining the future strategy of the MIM, a plan that takes into account funding opportunities and is well anchored among the MIM constituents. The continuation of the Multilateral Initiative on Malaria has all chances of success provided that the alliance can grow in a dynamic way and meet the challenges associated with this growth.

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